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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Joan Manuel Garcia

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06/21/2004

HEWLETT-PACKARD COMPANY

Intellectual Property Administration

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EXAMINER

NGUYEN, LAM S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 06/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	09/941,884		GARCIA ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	LAM S NGUYEN		2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 20-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2 and 11 is/are allowed.
- 6) ☒ Claim(s) 1,3-10,12-18 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 3, 5-6, 10, 14-15, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunand (US 6398334) in view of Takagi et al. (US 6089695).

Dunand discloses a diagnostic method for visual detection media advance calibration in an ink-jet printing comprising:

printing different areas of a diagnostic at different passes of one or more ink-jet printhead controlled amount of media advances between the passes, to accumulate media advance error between the printing of the different areas; and examining the diagnostic pattern to determine whether the accumulated media advance error is sufficiently objectionable to take corrective action (column 10, line 22-26: if the accumulated advance error reaches a half of a nominal advance, the corrective action is that the reference mark is chosen to print the next band).

Dunand does not disclose the step of entering a diagnostic mode of the printing system in which mode normal printing jobs of the printing system are not printed (**Referring to claim 1**) and an initial step of checking for printhead health and taking any corrective needed action prior to printing said diagnostic pattern (**Referring to claims 6, 15, 22**).

Takagi et al. disclose a process in a printer comprising a step of entering a diagnostic mode of the printing system in which mode normal printing jobs of the printing system are not printed (FIG. 12A, step S102: PRINT DETECTION PATTERN), and an initial step of checking for printhead health (FIG. 12, step S104: NON-DISCHARGE NOZZLE IS PRESENT) and taking any corrective needed action prior to printing said diagnostic pattern (Abstract: After abnormal nozzles are detected, data related to such abnormal nozzles are removed).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the printing process disclosed by Dunand such that including the step of entering diagnostic mode that checks printhead health and takes any corrective needed action as disclosed by Takagi et al. The motivation of doing so is to provide a liquid discharge apparatus capable of obtaining the desired result of discharges without any defects even when non-discharge or another malfunction occurs in the discharging means as taught by Takagi et al. (column 3, line 60-65).

Dunand also discloses the following claimed invention:

**Referring to claims 5 and 14:** wherein the step of examining the diagnostic pattern is conducted by an optical sensor (FIG. 8, element 12).

2. Claims 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunand (US 6398334) in view of Takagi et al. (US 6089695), as applied to claims 1 and 10, and further in view of Maeda et al. (US 6334659).

Dunand, as modified, discloses the claimed invention as discussed above except that wherein said step of printing different areas of a diagnostic plot includes: applying a diagnostic multi-pass print mode mask, wherein a plurality of carriage passes are employed to print the area

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subtended by a printhead nozzle array, the diagnostic print mode mask comprising a rectilinear grid of pixels, with each pixel location having a number associated therewith, the number representing the pass in which the pixel will be printed, and wherein said different areas nominally aligned along a horizontal line include a first set of pixels on a row of said grid, and a second set of pixels on said row, and wherein said first set of pixels is printed on a different pass than said second set of pixels is printed. .

However, Maeda et al. discloses that wherein said step of printing different areas of a diagnostic plot includes: applying a diagnostic multi-pass print mode mask, wherein a plurality of carriage passes are employed to print the area subtended by a printhead nozzle array (FIG. 7A), the diagnostic print mode mask comprising a rectilinear grid of pixels (FIG. 10), with each pixel location having a number associated therewith (FIG. 10), the number representing the pass in which the pixel will be printed, and wherein said different areas nominally aligned along a horizontal line (FIG. 10C: areas printed by #1 pixel and #3 pixel are aligned along a horizontal line) include a first set of pixels on a row of said grid, and a second set of pixels on said row (FIG. 10C: the #1 pixel set is on the same row with the #3 pixel set), and wherein said first set of pixels is printed on a different pass than said second set of pixels is printed (FIG. 10C: the #1 pixel set and #3 pixel set are printed on the different passes).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to include the applying of a diagnostic multi-pass print mode mask as disclosed by Maeda et al. into the advance control process as disclosed by Dunand, as modified. The motivation of doing so is to reduce the formed bind pitch to less than paper transport width

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without increasing the number of scans; thus, the banding artifacts are imperceptible as taught by Maeda et al. (column 4, line 4-10).

3. Claims 8-9, 12, 17-18, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunand (US 6398334) in view of Takagi et al. (US 6089695), as applied to claim 10, and further in view of Yen et al. (US 5992962).

Dunand, as modified, discloses the claimed invention as discussed above except wherein said diagnostic print mode mask defines that the first  $w/2$  pixels in the row are printed in the same pass, and the last  $w/2$  pixels in the row are printed in another pass, wherein said diagnostic print mode mask includes a row wherein said first  $w/2$  pixels are printed in a first pass, and said last  $w/2$  pixels are printed in a last pass of said plurality of passes, and wherein said different areas are nominally aligned along a horizontal line (**Referring to claims 3, 12**), and the diagnostic print mode mask comprising a rectilinear grid of pixels and a row width of  $w$  pixels, and said different area include a first set of pixels on a row of said grid, and a second set of pixels on said row, and wherein said first set of pixels is printed on a different pass than said second set of pixels is printed (**Referring to claims 8-9, 17-18, 20-21**).

Yen et al. disclose printing patterns including the first  $w/2$  pixels in the row are printed in the same pass, and the last  $w/2$  pixels in the row are printed in another pass, wherein said diagnostic print mode mask includes a row wherein said first  $w/2$  pixels are printed in a first pass, and said last  $w/2$  pixels are printed in a last pass of said plurality of passes (FIG. 6), and wherein said different areas are nominally aligned along a horizontal line (FIG. 3), and the diagnostic print mode mask comprising a rectilinear grid of pixels and a row width of  $w$  pixels, and said different area include a first set of pixels on a row of said grid, and a second set of

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pixels on said row, and wherein said first set of pixels is printed on a different pass than said second set of pixels is printed (FIG. 6) (Referring to claims 8-9, 17-18, 20-21).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the diagnostic pattern disclosed by Dunand, as modified, such as the first w/2 pixels are printed in a first pass and the last w/2 pixels are printed in a last pass of said plurality of passes as disclosed by Yen et al. The motivation of doing so is to eliminate unpleasant banding artifacts caused by ink migration as taught by Yen et al. (Abstract).

4. Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunand (US 6398334) in view of Takagi et al. (US 6089695) and Otsuki et al. (US 6196736).

Dunand, as modified, discloses the claimed invention as discussed above, except wherein said step of examining the diagnostic pattern is conducted visually by a user.

Otsuki et al. disclose a process in a printer including a step of examining the diagnostic pattern is conducted visually by a user (FIG. 15).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the examining process of the diagnostic pattern as disclosed by Dunand, as modified, such that the examining of the diagnostic pattern is conducted visually by a user as disclosed by Otsuki et al. The motivation of doing so is to be able to correct the advance media error by inputting correction values or adjusting parameters of the system which are done by the user as taught by Otsuki et al. (FIG. 15).

***Allowable Subject Matter***

Claims 2 and 11 are allowed:

The most pertinent cited art fails to disclose wherein said printing different areas comprises printing a first area comprising a first set of pixels printed during a first pass; conducting a plurality of incremental media advances; printing a further area comprising a second set of pixels printed during a further pass, wherein media advance errors resulting from said plurality of media advances are accumulated between printing said first area and printing said further area. Therefore, the claimed invention is not disclosed by the cited prior art.

### ***Response to Arguments***

Applicant's arguments filed 03/22/2004 have been fully considered but they are not persuasive.

**Regarding to the argument on page 16:** The applicants argued that there is no teaching or suggestion from Takagi to modify Dunand with a diagnostic mode. The examiner does not agree to the argument. As stated in *MPEP 2143.01*, “*There are three possible sources for a motivation to combine references: The nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art*” also “*Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art*”. In this case, the secondary reference, Takagi, implicitly teaches an advantage of taking a detecting step preceding printing to make sure the printing operation is adjusted, set up, or controlled in accordance to the result from the detecting step in order to gain printing quality. Therefore, one of ordinary skill in the art would have motivation to modify Dunand's method by having the diagnostic step to be done prior the printing step in order to be



able to control the printing operation based on the result of the diagnostic step to avoid undesired result on printed images due to the variations of the printing mechanism (the nature of problem is solved). Therefore, the argument is not persuasive.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN

June 15, 2004

  
**HAI PHAM**  
**PRIMARY EXAMINER**